United States Patent Office

3,279,934
Patented Oct. 18, 1966

1

3,279,934
JOINT FILLING COMPOSITION

Harry R. Schuppner, Jr., El Cajon, Calif., assignor to Kelco Company, San Diego, Calif., a corporation of Delaware

No Drawing. Filed Dec. 23, 1963, Ser. No. 332,903
10 Claims. (Cl. 106—85)

This application is a continuation-in-part of copending application Serial No. 158,640, filed December 5, 1961, entitled Joint Filling Composition, and now abandoned. This invention relates to cementing compositions and more especially to improved aqueous finishing cements of the type including an inorganic mineral filler and additives for improving adhesion and "workability."

In the art of rendering smoothly finished surfaces, especially the surfaces of interior structures such as walls, ceilings, and the like, workers are regularly confronted with the problems of filling a cavity, of cementing units together or both. To meet these problems workers customarily turn to what may be called "finishing cements," especially in the construction and finishing of wallboard type surfaces. Such "finishing cements" may be understood to generally include a finely ground mineral filler such as limestone or the like, an aqueous vehicle in which the filler is to be suspended for easy applicability and, often, a suitable binding agent compatible with the aqueous vehicle, such as a glue or the like. The plasticity of the cement thus derived makes it apt for filling depressions in a surface; for example, for filling-in cracks and wall joints, for hiding nail holes, for repairing minor cracks in cementitious or plaster walls and like purposes. Such finishing cements are sometimes known as spackling compounds, joint compounds, topping cements, crack-fillers, plastic cements, wall joint fillers, and the like. Such finish-filler compositions are also used as surface-texturing materials such as in a wall-paint to render a stippled or roughened texture which both decorates a surface and hides minor blemishes, especially on wallboard, concrete, or plaster type walls.

Illustrative of the problems associated with these compositions are joint-compounds for use with wallboard (i.e., plaster-integrant panels, used in dry-wall construction) for interior wall and ceiling surfaces. These joint-compounds are a filler material which is adapted to fill the joints between panels and thereby cement them together in place as well as to fill cavities or cracks in and between the panels, and to imbed reinforcing paper tape along the joints between the panels. This tape is often cemented in combination with metal (outside) corners and must bond securely with them. A finer and smoother joint compound is often used whereby to provide a smooth cementitious covering or topping over such surfaces as rough-cemented joints (as a base), and nail-holes or other cavities in plaster panels. Such a use of a plastic joint-compound is more completely described in U.S. Patent 2,456,269 to Gill. Products of this type are generally made by preparing a dry mixture of a suitable mineral filler, including limestone, silica, clay, pyrophyllite, slate, asbestine, mica, and the like, naturally all ground to a considerable fineness, generally below 200 mesh, with a suitable binding agent compatible with water. For use, the so described mixture is worked up with sufficient water to yield a trowelable consistency. It is then applied to the wall joints or hairline cracks to be filled, most generally with a trowel, or, where the same mixture is used as a surface coating, it is applied to the surface by such known means as a paint

2

roller or even by blowing with a device of the cement gun type. The water is allowed to evaporate whereupon the binding agent included in the formulation sets the applied material to a hard rocklike mass.

While it may at first appear simple, it is not easy to formulate a filler of the type described which fulfills the necessary functions ideally. One of the greatest difficulties encountered is shrinkage upon drying, which naturally defeats the purpose of a joint filler in the first place, namely, to form an unbroken contour in the treated surface. Another problem commonly encountered is the lack of suitable thixotropic and workability properties, which, when ideally present, will permit easy application, by troweling or otherwise, and with instantaneous cling and "set-up" as soon as the trowel is removed.

In the use of a plastic finishing cement, it is commonly a vexing problem to apply the wet cement properly to a substrate. If the cement is sprayed on (e.g., with a cement gun) the flow-resistance of the highly viscous cement under pressure quite often is a problem. A composition which will not flow easily and evenly through the pressurized lines is obviously unsatisfactory for spray-on applications. On the other hand, filling compositions are commonly applied with a trowel, or other bladed tool, and for this, must exhibit good cling (i.e., not flow or run when deposited upon a surface) as well as ready workability under the action of a trowel, for instance. Prior art cements having the desired cling are not satisfactorily workable and too viscous for good spray-on usage. The invention has provided these contrary features, however.

For example, finishing cements are commonly carried by a worker on a flat dispenser plate known as a masoner's "hawk," having a handle underneath whereby the worker may balance a quantity of cement on the plate as he moves about applying portions to a wall or other treated surface with a trowel or broad knife. For instance, such a worker might be filling nail-holes or touching up a plasterboard wall. Workers in the art recognize that when a supply of the cement material is placed upon the hawk to be carried thereon and worked therefrom, it must "set-up" and hold together, lest it run and drip from the hawk. The cement must clink together well even when a worker is picking his way tipsily up a ladder or across a staging. The inventive composition provided by the addition of a Xanthomonas colloid according to the invention provides this internal cling to a cement.

Cling properties are also critical for aqueous cements as they are applied to a substrate. Good substrate-cling is necessary to provide control of the cement, keep it in place and prevent creep or sag, for instance, when wet cement is slapped against a smooth vertical wall. This substrate cling requires not only that the cement should adhere to a wall surface, but that it should "set-up" so that a glob of the material laid on a surface does not flow-out onto surrounding areas but maintains its conformation, substantially as applied. Without such control of cement morphology, applying it is a messy proposition, as workers in the art today know since they must regularly contend with poor cling. Aqueous finishing cements such as joint compounds for wallboard panels are sometimes seen oozing down vertical walls, dripping upon newly-laid floors, furniture, etc., and staining them badly. Poor cling also makes it difficult for a worker to manipulate wet cement after he has applied it to a surface, i.e., to spread it out evenly to exactly the place and depth he desires. The invention renders this substrate-cling where the prior art cannot.